

COURSE : DISASTER MANAGEMENT (MA/ MSc PART I)

Paper : II

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Topic : Search and Rescue Operations

Search & Rescue Operations :

Over the past two decades, disasters in heavily populated areas around the world have increased the need for sophisticated Search & Rescue (SAR) capabilities to assist trapped victims. Recent improvements in technology have also increased the ability to locate, medically treat and rescue trapped victims. Many countries have developed a SAR capability and routinely send teams of well-trained experts to assist other countries in times of need. Recently, in India, we have witnessed such foreign SAR teams at work during the Gujarat Earthquake-2001. The accepted definition of the Urban Search and Rescue (USAR) with which the present day SAR Teams work is as follows:

“An integrated multi-agency response which is beyond the capability of normal rescue arrangements to locate, provide initial medical care and remove entrapped persons from damaged structures and other environments in a safe and expeditious manner.”

It should be noted that in India we do not yet have a fully developed search and rescue capability as compared to some of the advanced nations. In India, traditionally and routinely, these tasks are being performed primarily by the Indian Armed Forces assisted by the local residents and at times, other organizations. However, learning from some of the recent disasters that have struck our country, all efforts are being made to develop such capability within the country, especially within the local emergency management authorities.

For instance, under the National Disaster Response Plan (a document prepared by the High Powered Committee on Disaster Management, September 2001) the Ministries of Defence and Home Affairs are charged with the responsibility for “search and rescue” as one of the Emergency Support Functions. The Gujarat State Disaster Management Act (Act No. XX of 2003) Chapter XI, Section 27 casts the responsibility of carrying out search and rescue operations on the police force, gram rakshak dals, home guards, civil defence units and fire services. It should be noted that the Gujarat Disaster Management Act is the first of its kind in our country and other States are in the process of drafting such Acts.

With this background, let us now study how search and rescue operations are conducted worldwide and what are some of the standard accepted practices for conducting search and rescue.

SEARCH TEAMS:

The Search Teams are expected to have the capability to perform physical search, consisting of conducting interviews with survivors and a systematic movement across the site while listening for calls for help; canine search (search by dogs specially trained to find out trapped victims under debris of fallen structures and avalanches) and electronic search using sophisticated listening and seismic equipment. These three primary types of search allow search personnel to focus on the most important potential rescue opportunities.

Prior to initiating search operations, the team must determine the search strategy to be followed. This should be based on detecting and locating the greatest number of victims in the shortest amount of time. A plan should be developed which prioritizes the search opportunities based on a number of factors, including occupancy, time of day, and local information on missing persons. In most cases, if the local rescuers have not identified locations of trapped people, the team's search operations will begin with a rapid initial search of their assigned area followed by a more thorough main search.

- The Search Team is usually tasked with determining the type of assistance needed as follows:
 - Whether technical equipment and dogs are required;
 - What type of lifting, pulling, cutting, digging and lighting equipment will be required for rescue operations;
 - Whether medical assistance is needed to oversee and aid in victim extraction;
 - What special operations will be required to remove hazardous materials, demolition, shoring of dangerous structures and damage repair.

SEARCH STRATEGY:

This involves developing a process for detecting and locating the greatest number of victims in the shortest amount of time. There are two basic types of Search Strategies:

- • Initial search which is less in depth but more rapid. This is composed primarily of physical and/or canine search operations.
- • Main search which is a thorough search. This would be composed of in-depth search operations with electronic equipment supported by canine and physical elements.
- The Search Prioritization is based on:
 - - type and size of occupancy
 - - number of potential victims
 - - condition of structures

- - time of day of occurrence post event
- - safety and security considerations
- - work area accessibility
- - local information
- - availability of resources
- - limitation of resources

SEARCH PLAN:

A search plan will ensure that all the Search Group's efforts are brought to bear in a systematic and coordinated manner, utilizing the most up-to-date intelligence about victims and buildings combined with trained and briefed search personnel. This includes:

- Development of a search plan based on the results of:
 - - Area assessment – a broad reconnaissance of an assigned area
 - - Structures triage – an assessment of hazards and a prioritization of potential victims of the involved buildings/structures
- The Search Plan should include:
 - - Search objectives and priorities
 - - Strategies and tactics
 - - Resources assigned
 - - Available maps and drawings
 - - Safety and security considerations
 - - Coordination and communication issues
- The Search Plan is implemented by (a) briefing all personnel, (b) deploying search personnel, (c) evaluating for operational effectiveness and (d) revising the plan as appropriate.

RESCUE OPERATIONS:

Rescue operations follow the search phase and are focussed on extricating the greatest number of victims in the shortest amount of time, prioritizing technical rescues that cannot be addressed by local resources. Based on the search results, the team must prioritize the rescue sites and determine what resources are to be committed to a rescue site based on the potential success. Generally, rescue operations are prioritized based on rescues that are easily achievable and moving on to those that are more complex. A rescue plan will ensure that all efforts are brought to bear in a systematic and

coordinated manner, using the most up to date intelligence about the victims and buildings. The overall Rescue Operations are comprised of the following five phases:

Phase I: Assessment of the collapsed area. The area is searched for possible victims (surface and/or buried) and the evaluation of the structure's stability and potential danger to rescue personnel is performed. All utilities must be evaluated and controlled for safety.

Phase II: Removal of all of surface victims as quickly and safely as possible. Extreme care must be used during this phase to ensure that rescuers do not become victims. Personnel should not be misled by the outward appearance of a structure – what appears to be a settled pile of debris could, in reality, be lacking any genuine support and a secondary collapse could occur without warning.

Phase III: All voids and accessible spaces created as a result of the collapse must be searched and explored for live victims. An audible call out system can be used during the phase. Only trained canine or specially trained rescue personnel should be used in voids and accessible space searches.

Phase IV: Selected debris removal, using special tools and techniques, may be necessary after locating a victim. It may be necessary to remove only certain obstructions that are blocking access to the victim. Information concerning a victim's location prior to the collapse can be helpful during the selected debris removal phase. Information gathering on other possible victim locations can greatly enhance the operation.

Phase V: General debris removal is usually conducted after all known victims have been removed. Exceptions would be 1) when information is obtained that indicates the possibility of other victims not originally accounted for and, 2) when large amounts of debris are impairing or obstructing operations. The decision to use heavy equipment during this phase must be given serious consideration, especially when the possibility exists that there are still live victims in the debris.